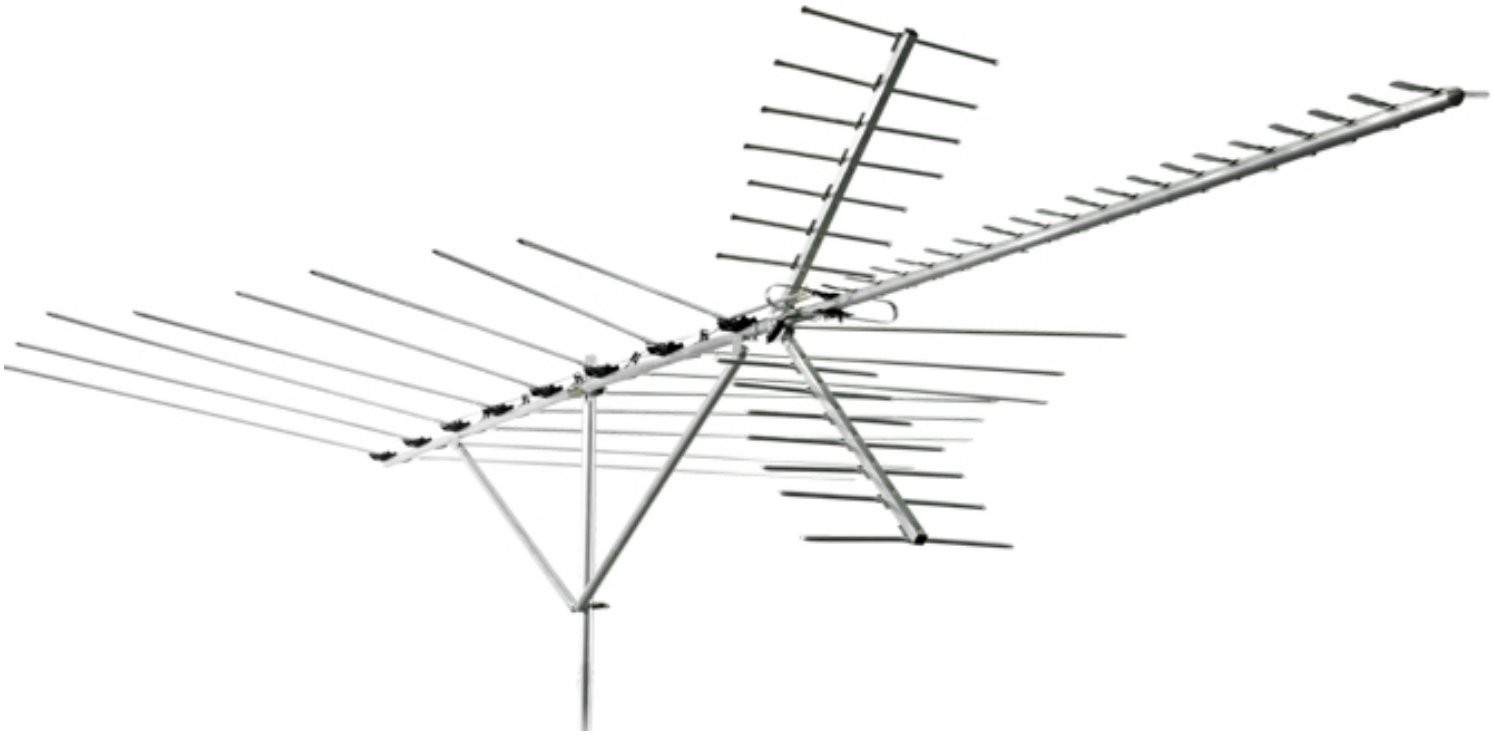

Channel Master Advantage 100 ($119) covers 54 to 216 and 470 to 700 MHz with 8.6 dB gain (VHF) 9.5 dB gain (UHF) and a front-to-back ratio of 16 dB. RG/6 coax, a mast-mounted preamp and rotator may improve your reception. (Courtesy: Channel Master https://www.channelmaster.com/Digital_HDTV_Outdoor_TV_Antenna_p/cm-3020.htm)

ATSC 3.0 Update and Progress Report on FCC Repacking Plan

By Mike Kohl

It is now summer 2018 and there have been many recent headlines and press releases concerning upcoming changes in our television media landscape. The opinions contrast like night and day, and nobody seems to agree on what is happening, or where it will go. This is an attempt to distill recent announcements and opinions from the pundits, with you the reader left to form your own opinions after studying what has been said.

The FCC repack is on its way, with any TV station receiving money to leave their previous frequencies now off the air. Full powered stations have been assigned their new permanent frequencies, and a special filing window closed on June 1, giving LPTV and translator stations a chance to find new channels because of being displaced by either full power assignments on previous channels, or from having to vacate the channel 38 to 51 spectrum. The latter should sort itself out in the next several months as the FCC analyzes all applications.

Originally, full powered stations were given the opportunity to sell their spectrum, and some took the money to the bank, leaving over-the-air broadcasting completely. Others invested in infrastructure; some made agreements to share or sublet space on existing remaining frequencies, remaining on the air in some form. There has been a move by some stations to Internet-only distribution, with hopes of converting to a pay model. The jury is out as to how this is working, and many questions remain.

Local primary stations are now faced with a completely new situation concerning their relationship with the major television networks. The networks themselves are at odds with certain station chain owners, and networks have started transmitting an Internet feed for nationwide distribution. Such national feeds could be used to displace local network affiliates when agreements cannot be reached for local cable and satellite reception of local stations, and Internet reception is used to supply the network signal. This could eventually compete with the local affiliates and the end result may be that the networks themselves are not directly represented in some local markets.

A power struggle may ensue, and some local affiliates may have to decide whether or not to continue as outlets for that network. Choices may include remaining affiliates, but with much reduced hours of network service, or leaving the network completely. Either situation may create the scenario of such stations becoming more or less fulltime independent TV stations. You could see substantially increased hours of

local news, and even a sourcing of programming from the likes of Me TV and other classic TV channels, in an effort to regain viewership numbers. The stations could also purchase rights to use the extensive libraries of the major networks' shows from the past.

There is diverse opinion on whether or not this could "burn out" viewership that watches nothing but reruns over and over again. How many times would you watch Gilligan's Island on a daily basis? Good or bad, things will change, and the expansion of channel number abilities increases our abilities for choice when the new ATSC 3.0 standard is implemented. There will be winners and losers at the local level, and weaker stations may leave the picture at some point due to an inability to compete and be profitable.

The FCC unveiled a 39-month plan to reallocate TV spectrum, after shutting down TV channels 38 to 51 in the UHF band. This limits use of TV frequencies to VHF channels 2 to 13 and UHF channels 14 to 36. The concept of more channels per frequency with a new compression scheme such as ATSC 3.0 was hoped to solve a spectrum shortage, especially in the big cities, from loss of those upper UHF channels. A combination of shifting to Internet, cable, and satellite instead of using broadcast TV channels could also alleviate the crunch, but forces viewers in almost all cases to pay for previously free channels. Internet only transmission also gives cable and other companies the chance to gain huge future profits as the gatekeepers of Internet service. It is a shell game with cable providers, who will lose money as TV subscribers defect to Internet only. Comcast has been reported to have a strategy that almost encourages cord cutters to migrate to the Internet, because there will be no actual financial loss to Comcast when the numbers are crunched, especially when added to future possible increases in pricing structure to Internet pricing.

The above FCC rollout may not proceed as smoothly as planned, because it is now projected that there may be a shortage of tower crews and possibly hardware to accomplish the frequency conversion plan on the previously announced schedule. Very close coordination of changes to individual markets has to be maintained, and if there are problems or delays in early markets, it could have a domino effect that forces delays to later planned schedules for other markets. Time will tell, but it will require a massive coordinated effort to do. Ten phases of deadlines for completion of repack assignments have been set.

Phase 1 repack assignments must be done by November 30, 2018. DMAs involved in Phase 1 are:

12-Phoenix. 34-Salt Lake City. 40-Las Vegas. 51-Memphis. 54-Fresno. 57-Little Rock. 69-Des Moines. 71-Tucson. 75-Springfield-MO. 78-Toledo. 90-Cedar Rapids-Waterloo. 106-Boise. 112-Reno. 116-Fargo. 120-Lafayette-LA. 122-Yakima-Tri Cities. 127-Columbus-GA. 132-Chico-Redding. 133-Columbus-MS. 137-Monroe-El Dorado. 139-Medford-Klamath Falls. 140-Minot. 141-Beaumont-Port

Channel Master "Pro" CM7778HD 75-ohm mast-mounted preamp ($99) covers 54~88 MHz, 174~260MHz, and 470~685MHz. with 23 dB gain (VHF high) and 16 dB gain (VHF low); 26 dB gain (UHF high) and 20 dB gain (UHF low). (Courtesy: https://www.channelmaster.com/Amplify_Plus_TV_Antenna_Preamplifier_p/cm-7778hd.htm)

Arthur. 143-Odessa-Midland. 145-Lubbock. 149-Sioux City. 152-Albany-GA. 153-Rochester-Mason City. 154-Panama City. 164-Missoula. 174-Lake Charles. 180-Marquette. 182-Jonesboro. 192-Great Falls.

Phase 2 repack assignments must be done by April 12, 2019. DMAs involved in Phase 2 are:

2-Los Angeles. 8-Houston. 16-Miami-Fort Lauderdale. 17-Denver. 25-Portland-OR. 28-San Diego. 32-Columbus-OH. 33-Kansas City. 38-West Palm Beach. 41-Oklahoma City. 58-Tulsa. 65-Honolulu. 79-Huntsville. 82-Shreveport. 98-Tri Cities-TN/VA. 99-Fort Smith-Fayetteville. 108-Tyler-Longview. 125-Monterey-Salinas. 129-La Crosse-Eau Claire. 134-Wausau. 151-Joplin/Pittsburg. 179-Alexandria-LA. 189-Lima-OH.

Phase 3 repack assignments must be done by June 21, 2019. DMAs involved in Phase 3 are:

3-Detroit. 5-Dallas-Fort Worth. 15-Minneapolis-St. Paul. 31-San Antonio. 39-Austin. 48-Albuquerque. 63-Lexington-KY. 68-Green Bay. 72-Flint-Saginaw-Bay City. 74-Omaha. 81-Portland-ME. 121-Macon. 126-Bakersfield. 146-Palm Springs. 185-Butte-Bozeman. 188-Bend-OR. -plus- Puerto Rico and the U.S. Virgin Islands.

The first three phases have been listed to show readers how the next year will go in Repack scheduling.

Phase 10 is supposed to be completed by July 3, 2020. Rather than waste space at this time, we will make updates in coming months, allowing for possible changes in the master schedule. It should be noted that there are a lot of stations already on their permanent frequencies. Repack assignments were given to a number of stations to allow the condensation of TV spectrum, and have been staggered to coordinate in a

somewhat orderly manner. It has been stated that ATSC 3.0 is a voluntary standard, to allow the market to decide on how it proceeds. There is an indirect connection to the completion of the repack in each market, which will likely then spike the interest by stations to make a decision on whether or not to go to the ATSC 3.0 standard, and when. With all of the change activity on transmitting towers, it makes no sense for most stations to jump into ATSC 3.0 until their market's TV channel frequencies are all finalized and in place. This is especially true in smaller markets, which will wait for the big boys with chains of stations, and larger markets themselves to make the first moves.

Phoenix, Arizona, will be the first test market transmitting in the ATSC 3.0 standard on a large-scale basis. Multiple broadcasters have teamed together in an effort to make this work. Participating stations include ABC-KNXV, CBS-KPHO, CW-KASW, FOX-KSAZ, My Network TV-KUTP, NBC-KPNX, Independent station KTVK, and Spanish language channels KTVW-Univision, KFPH-UniMax, and KTAZ-Telemundo.

Collectively, the group is known as Pearl TV. Their goals will be to confirm parameters and performance of broadcast signals, determine how the public perceives advanced next generation HD video and superior audio content, interactive and addressable functions that include targeting advertising, and other applications. Pearl is working with Cox Cable in the area to fully test broadband Internet abilities, concerning itself with content protection, conditional access, interpretation of audience data, signal quality measurements and advanced new applications. The consortium expects to start broadcasting on a second facility late in 2018, further expanding channel numbers to the Phoenix market. All repacking activities for both Phoenix and Tucson markets have been scheduled to be completed no later than November 30, 2018.

Other advanced testing is being done in the Dallas, Texas, market, spearheaded by Sinclair Broadcasting. They are very optimistic on the prospects of mobile technology, and will pioneer SFN transmission. High powered ATSC 3.0 signals transmit from two central locations, and will be supplemented by three additional low powered transmitters in outlying locations, all transmitting on the same frequency. This combination is intended to solidify signal reception across the entire metropolitan area, allowing high data rates and good mobile reception anywhere. Testing by the NAB and CTA at WWJ-TV in Cleveland, Ohio, has confirmed that there are no problems with multipath reception when using the ATSC 3.0 system. Multipath plagued previous analog reception with ghosting, and this author has experienced it on the ASTC 1.0 digital system in changing signal levels and varying paths caused by differences in snow depth as well as thickness of leaves on the trees. The same testing also confirmed that except in situations where local terrain completely blocked signal, reception levels and quality readings were equal at worst and usually considerably better using the

Winegard FlatWave Air VHF/UHF amplified outdoor antenna ($99) may be all you need at your location. Comes with mounting mast hardware. Add your own RG/6 coax. (Courtesy: http://www.winegard.com/flatwave/air)

ATSC 3.0 system as compared to ATSC 1.0 results.

There is much good news already for the future of ATSC 3.0 on these technical points, and further testing will provide equipment manufacturers valuable insight before having to produce hardware to support a national rollout of ATSC 3.0. Depending upon which industry spokesman you believe, it is expected that it will be anywhere from late 2019 to perhaps the Christmas selling season of 2020 before TV sets are equipped with built-in ATSC 3.0 tuners in quantities available for mass consumer purchase. Sony is expected to have the first dual ATSC 1.0 and ATSC 3.0 chipsets available to manufacturers by next month. This is an interesting trend, because back in 2015 and 2016, TV manufacturers almost completely abandoned the use of built-in TV tuners for digital ATSC 1.0 reception. They were promoting the Smart TV concept, and counting upon the use of primarily Internet connection as well as the use of HDMI connections to feed the sets themselves with external cable boxes and similar devices. It was felt that there was no need to include an HD off-air tuner, and that "everything would be going to the Internet." Several programming suppliers, notably Weigel Broadcasting, even spoke of cutting off the ability of local stations transmitting their sub-channels, including Me TV, and only allow reception by subscription via local cable, satellite providers such as DISH and DirecTV, and the Internet. All would be on a subscription basis, and previous off-air viewers accustomed to free reception from their local stations would have to find a way to get a subscription solution. This author found such attitudes both amusing and short

sighted, given that many of the advertisers on these sub-channels were targeting the elderly, as well as lower and middle class viewers, many of whom may not be able to afford or want a subscription to that channel. Not to mention the millions of people still outside the coverage of high speed Internet in rural areas. Despite claims that everyone can be wired to high-speed delivery, it ignores logistics and economics. Those advertisers of pain remedies, telephone service and even cheap antennas for free digital TV will miss many of their potential viewers if cut off from free over-the-air digital reception.

Some broadcasters may continue to hope for massive enrichment by converting to a pay television only model, but there are others very content to serve everyone with free advertiser-supported signals. The smart money is now on anything that has a dual capability ATSC 1.0 and ATSC 3.0 tuner. It may take one to two years or more for some television manufacturers to incorporate such hardware into new models, but this situation gives new opportunities for the once lowly set-top box.

Manhattan-Digital in Wisconsin hopes to specialize in multimedia set top boxes, with plans for a dual ATSC 1.0/3.0 device that could be available this coming fall (2018), at a very competitive price. (Full disclosure: the author is part of a development team at Manhattan-Digital in the introduction of new reception technologies). The reality of the ATSC 3.0 situation is that there are *zero* reception devices in the homes of Americans as of this writing.

Assuming a rough number of 2.5 to 3.0 televisions per household in this country, the potential exists for the need to have between 250 and 300 million ATSC 3.0 reception devices in order to receive this new programming standard. People will likely not spend money to replace every television set, and the only practical way for most households to participate in continued free over-the-air reception is with a set-top box capable of the new 3.0 standard, as well as the old ATSC 1.0 system. Existing and planned televisions are woefully lacking in abilities such as program storage (think DVR and TiVo-like devices).

The only ATSC 3.0 TV sets are in South Korea where they were used to display this year's World Cup games. (Courtesy: ATSC.com)

This is much more easily accomplished with a reasonably priced set-top box. Multiple set-top configurations could cost effectively allow a mix of subscription and free TV, delivered by local VHF and UHF television frequencies, direct Internet, and satellite reception. Estimates as high as 55 million have been thrown about for the numbers of sets and converters presently antenna-equipped for local reception. Intelligent rollout of ATSC 3.0 could spur further interest in local TV antennas, possibly reviving that industry.

One thing to consider, even if your local TV market will not get ATSC 3.0 right away, is to look at the idea of getting a converter early in the game, especially if you are on the fence with regard to purchasing a 4K or any other new television. Converters could be "future-proofed" by virtue of having an ATSC tuner that works for present ATSC 1.0 signals, and will also have the ATSC 3.0 tuner included. Advanced features such as recording will be built into these boxes, and you might be able to enjoy them right away using the signals presently available. Such a box could be ready for 3.0 whenever it shows up in your market.

Some facts that may not be readily known about ATSC 3.0 include: that it has been mandated as a "voluntary" standard, with the television industry determining how the market will develop. Consumers will have a minimum of five years before simulcast ATSC 1.0 transmissions to 3.0 are turned off. Whatever happens with the ATSC 3.0 broadcast standard, it will not affect the plans or operations of cable, satellite, or Internet delivered streaming television.

Mobile reception of TV signals on telephones could become a reality in the very near future. Broadcasters love the idea, providing the ability to receive TV programming almost anywhere with a portable device. Cell phone companies are presently indifferent about the idea, but TV broadcasters see huge potential in preserving or even expanding existing audience numbers.

There is a lot of optimism that a combination of free "next generation" over-the-air television from local stations, as well as Internet and satellite reception from thousands of channels from around the world, will be the end result of what "cord cutters" started just a few years ago. Consumers now have the power to revolt against old school cable packages, and pay for only what they want, if they want to have subscription television.

There has never before been as much free media as we have available today via off-the-air digital TV and high speed Internet. Stay tuned! We will have more chapters to report in coming months and beyond. **TSM**